2018: a year in global climate statistics

Description

2018 was a significant year for the monitoring of the climate, as reported in the latest State of the Climate report, published by the Bulletin of the American Meteorological Society.

One of the highlights is that globally, 2018 was the fourth warmest year in a record stretching back to the mid-1800s. Combined with the previous three years, the last 4 years were the warmest in the record, with 2016 being the warmest in the instrumental record. The report also highlights that every year since 2000 annual global surface temperatures have been above the 1981-2010 long-term average.

In both scope and production, the State of the Climate report series is global. Over 165 authors from around the world help compile the chapter on the Global Climate, including six from the Met Office. The latest State of the Climate report is the 29th edition.

Robert Dunn is a Met Office senior scientist who also leads the editorial team for the Global Climate chapter. Commenting on the latest report covering 2018, he said: “One of the stories that the BAMS State of the Climate draws out is that the number of warm extreme temperatures is much larger compared with the number of cool extremes. For example during the heatwaves experienced last year, new maximum temperature records were set in Japan, Canada and Algeria.

“However, although the number of cool extremes was much lower, they still occur. Notably, during the period when the “Beast from the East” drove a period of intense cold air from Siberia, the UK recorded a new low daily maximum temperature for Spring with a daily maximum of -4.7 C recorded in Tredegar in Wales. There were also cool autumn records in the eastern United States.”

Other sections of the report focus on the water cycle, land surface and atmosphere. Of particular note are the latest reports on the cryosphere – the Earth’s combined natural resource of frozen water, above and below the surface.

Regular monitoring of the mass of specific glaciers descending down mountain valleys – so-called alpine glaciers – reveals that the loss of ice during the period 1980-2018 was equivalent to the removal of a 24-metre slice of ice from the top surface of an average alpine glacier.

Robert Dunn added: “The rate of loss of volume from alpine glaciers during 2018 has been so extensive that it may surpass the rate in 2003, the previous record year. Glaciers have lost mass in every year for the last 30 years.”

Carbon dioxide levels reached 408.5 ppm at Mauna Loa in 2018, compared with 315ppm when monitoring started in 1958. When looking at the concentration of greenhouse gases, including carbon-dioxide, methane and nitrous oxide, their combined forcing in 2018 is 1.43 times greater than the figure in 1990.

After a peak in 2016, the global area in drought has declined slowly to reach below average levels. During 2018 around one fifth of the earth's land surface was considered in moderate drought and 2.7 % in extreme drought.

Here are some of the numbers from 2018:

3.1 mm—the mean annual global rise in sea level in the satellite era—a trend that is accelerating.

11: The worldwide count of Category 5 tropical cyclones, one off the record set in 1997.

22%…the portion of anthropogenic carbon releases in 2008-2017 absorbed by the oceans, moderating the atmospheric warming but acidifying waters.

24 meters: the thickness that would have had to be lopped off the top of the world's glaciers to equal the mass of ice lost since 1980.

30 years: the ongoing streak in which global glacier mass has decreased.

51.3°C: new national record for Algeria set at Ouargla on 5 July.

77%: the portion of Arctic ice pack in March 2018 that was first year ice—highly vulnerable to summer melt.

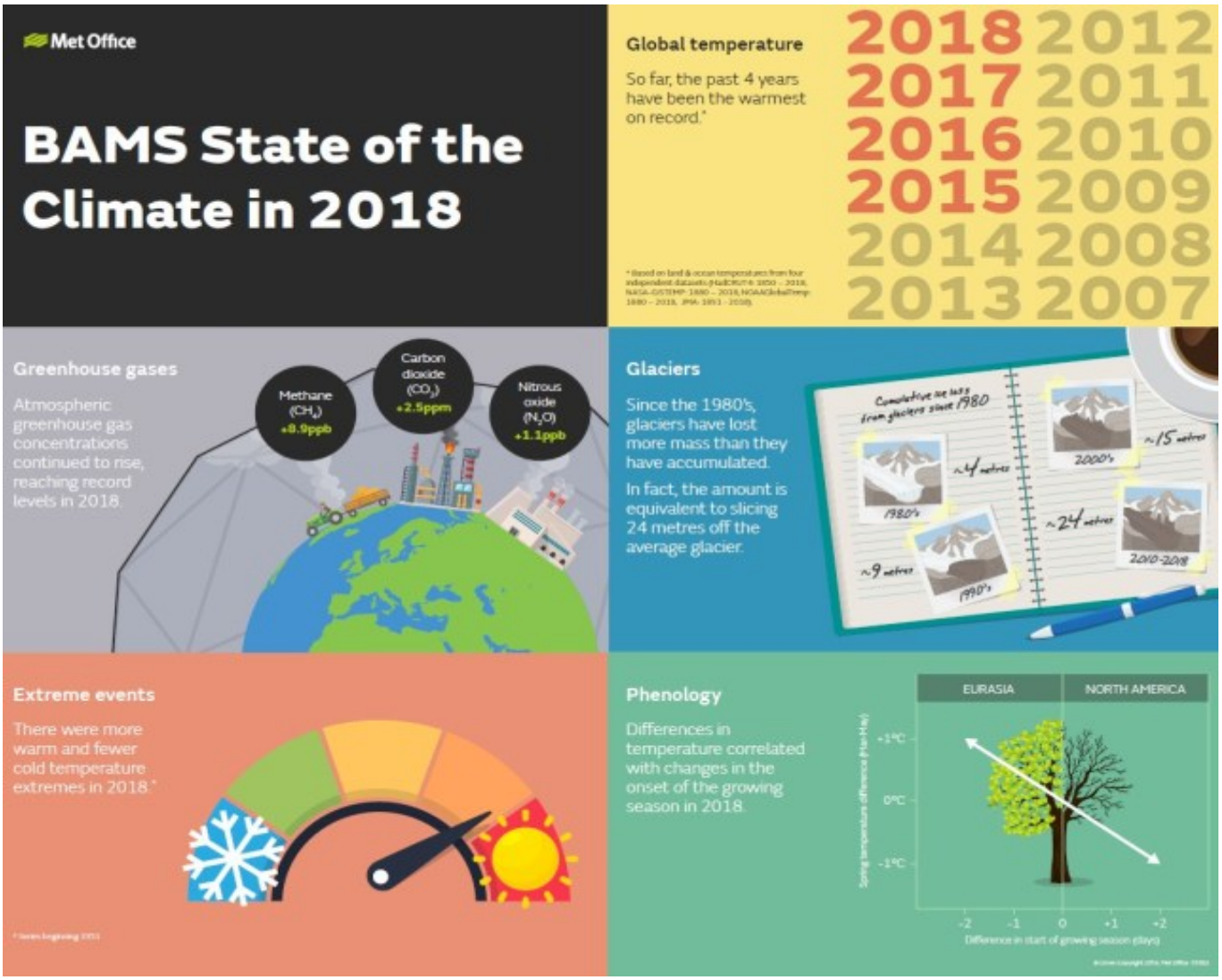
81 mm: the amount global annual mean sea level exceeded the 1993 level.

1262 mm: A U.S. record for 24-hr rainfall in Waip? Gardens (Kauai), Hawaii, 14-15 April.

500 million hectares: the lowest global fire extent area since records began in 1997.

$40 billion: The combined cost of U.S. wildfires in 2017 and 2018.

These key findings and others are available from the *State of the Climate* in 2018 report released online today and can be read in full here.



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